REMARKS

Applicant respectfully requests re-consideration of the application in view of the amendments and the arguments presented below.

Summary of Office Action

Claims 1-20 are pending.

The drawings were objected to.

Claims 1-6, 11, and 12 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,944,213 B2 of Lee ("Lee").

Claims 1, 4, and 10-12 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,295,343 B1 of Hjartarson, et al. ("Hjartarson").

Claims 13-16 were rejected as being unpatentable under 35 U.S.C. § 103 over Hjartarson in view of U.S. Patent No. 5,452,345 of Zhou ("Zhou").

Claims 13-18 were rejected as being unpatentable under 35 U.S.C. § 103 over U.S. Patent No. 5,930,340 of Bell ("Bell") in view of Zhou and U.S. Patent No. 5,329,588 of Wilcox ("Wilcox").

Claim 7 was rejected as being unpatentable under 35 U.S.C. § 103 over Hjartarson in view of Zhou.

Claims 8-9 and 19-20 were rejected as being unpatentable under 35 U.S.C. § 103 over Hjartarson, Zhou and U.S. Patent No. 5,835,533 of Booth, et al. ("Booth").

Response to Drawing Objections

The Examiner objected to drawings 1-3, 4A, and 4B as illustrating only prior art. Accompanying this Amendment are replacement drawing sheets for Figures 1-3, 4A and 4B. Applicant has designated Figures 1-3 and 4A with the legend "Prior Art". Applicant respectfully disagrees with the Examiner as to Figure 4B because Figure 4B illustrates the integration of POTS and DSL linecards thus Figure 4B has not been designated with a "Prior Art" legend.

Applicant respectfully submits that the objections to the drawings have been overcome.

Response to 35 U.S.C. § 102 rejections

Claims 1-6, and 10-12 were rejected as being anticipated by at least one of Lee and Hjartarson.

With respect to Lee, the Examiner has stated:

> Lee teaches a subscriber line interface circuit apparatus shown in Fig. 2, comprising:
>
> a driver (380) combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line (290); and
>
> receiver circuitry (240) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die.

(09/27/2005 Office Action, p. 3)

Applicant traverses the Examiner's characterization of Lee. Lee's element 380 is a driver for communicating *upstream data signals* to the subscriber line. Lee's receiver circuitry is coupled to extract *a downstream data signal.* The citations provided by the Examiner do not appear to support the Examiner's position.

Applicant submits that *Lee does not teach or suggest an integrated circuit driver that combines a downstream voice signal and downstream data signal into a common downstream signal for the subscriber line.*

To the contrary, referring to Figure 2, Lee clearly has distinct couplings from the integrated circuit 218 to the subscriber line 290 for each of the voice communications and the data communications. Furthermore, there is no common driver for the voice and the data signals.

Codec 212 is associated with the upstream or downstream *voice* signals. Transmit block 230 is separately responsible for upstream *data* signals. (Lee, col. 4, lines 20-35). There is no integrated circuit driver that combines a downstream voice signal and a downstream data signal into a common downstream signal for the subscriber line 290. Even if one assumes *arguendo* that directionality (i.e.,

upstream or downstream) is irrelevant, applicant notes that Lee's *integrated circuit 218 does not include a driver that combines voice and data signals into a common signal for the subscriber line 290.*

Lee's receiver 240 is coupled to extract the downstream data signal from a downstream signal carried by the subscriber line. Lee does not teach or suggest a receiver that is coupled to provide both an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line. As before, even if one assumes *arguendo* that directionality (i.e., upstream or downstream) is irrelevant, Lee's integrated circuit 218 does not include a receiver that extracts both the voice signals and data signals from a common signal carried by the subscriber line.

Applicant thus submits that Lee does not teach or suggest either (1) a driver combining a downstream voice signal and a downstream data signal into a common downstream signal for a subscriber line, or (2) receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on the same integrated circuit die.

In contrast, claim 1 includes the language:

> 1. A subscriber line interface circuit apparatus, comprising:
> *a driver combining a downstream voice signal* in a voiceband range *and a downstream data signal* in a non-voiceband range *into a common downstream signal for a subscriber line;* and
> *receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die.*

(Claim 1)(*emphasis added*)

With respect to Hjartarson, the Examiner has stated in part:

> Hjartarson, et al teach an integrated subscriber line interface circuit apparatus shown in Fig. 4, comprising:
> ...
> receiver circuitry comprised of a feed resistor (418) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line....

wherein the driver and receiver circuitry reside on a same integrated circuit die (i.e., integrated line card 400)

(09/27/2005 Office Action, p. 5)

Applicant traverses the Examiner's characterization of Hjartarson. First, there is no teaching or suggestion that Hjartarson's driver and receiver circuitry reside on the same integrated circuit die. The term "integrated line card" cited by the Examiner refers to the integration of the POTS and xDSL functionality onto a single line card instead of the prior art practice of maintaining separate POTS and xDSL line cards. (Hjartarson, col. 5, lines 31-44). This is not equivalent to residing on the same integrated circuit die. Applicant further submits that a line card is not an integrated circuit.

Second, the purpose of Hjartarson's feed resistor 418 is to sense the current in the line for the purpose of synthesizing an impedance. (Hjartarson, col. 5, lines 31-44; col. 6, lines 17-24). The feed resistor is not capable of separating the upstream data signal and the upstream voice signal from the upstream signal carried by the subscriber line.

Buffers 407 provide the same subscriber line signal to both the POTS circuitry 406 and the xDSL modem 408. (Hjartarson, Fig. 6) Applicant submits Hjartarson does not teach or suggest separating the voice and data signals external to either the xDSL modem 408 or the POTS circuitry 406. In Figure 7, for example, POTS circuitry 406 and xDSL modem 408 receive the same signal from ADC 512 for their receive inputs. The embodiment in Figure 8 provides separate ADCs for the POTS circuitry and the xDSL modem receive inputs. Each ADC is coupled by a low pass anti-aliasing filter 514 through a buffer to the subscriber line. Since the voice signals have a lower frequency range than the data signals, the xDSL modem will inherently receive the voice signals along with the data signals. Also, since the corner frequency of the anti-aliasing filter for the POTS circuitry is not disclosed, it is ambiguous as to whether the POTS circuitry receives only voice signals or a combination of voice and data signals. In any event, there is no receiver separately providing voice and data signals.

The subscriber line signal includes both the xDSL and POTS signals. POTS circuitry 406 thus receives both the upstream and downstream POTS and xDSL signals appearing on the subscriber line. Similarly, xDSL modem 408 receives both the upstream and downstream POTS and xDSL signals appearing on the subscriber line. Applicant presumes that Hjartarson's high order filters in the input circuitry of the POTS circuitry and the xDSL modem are used to eliminate the unwanted signal components (see, Hjartarson, col. 7, lines 25-28).

Applicant submits that *Hjartarson does not teach or suggest a SLIC having driver and receiver circuitry residing on the same integrated circuit die, wherein the receiver circuitry provides an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line.*

In contrast, claim 1 includes the language:

> 1. A subscriber line interface circuit apparatus, comprising:
> a driver combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line; and
> *receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die.*

(Claim 1)(*emphasis added*)

Applicant submits claim 1 is not anticipated by Lee or Hjartarson. Given that claims 2-12 depend from claim 1, applicant submits claims 2-12 are likewise not anticipated by either Lee or Hjartarson.

Applicant submits that the 35 U.S.C. § 102 rejections have been overcome.

Response to 35 U.S.C. § 103 rejections

Claims 7-9, and 13-20 were rejected as being unpatentable in view of various combinations of Hjartarson, Zhou, Bell, Wilcox, and Booth.

Applicant submits claims 7-9 and 13-20 are patentable under 35 U.S.C. § 103 in view of the cited references, alone or combined.

With respect to claims 7-9, applicant respectfully submits that the cited references do not make up for the deficiencies of Hjartarson argued above with

respect to the 35 U.S.C. § 102 rejection of claim 1. Given that claims 7-9 depend from claim 1, claims 7-9 must likewise be patentable over the cited references.

With respect to claims 13-20, applicant notes that the arguments presented above with respect to the 35 U.S.C. § 102 rejections of claim 1 similarly apply.

Hjartarson does not teach or suggest that the driver and receiver circuitry reside on the same integrated circuit die. A line card is not an integrated circuit. Hjartarson's feed resistor does not provide any separation of upstream voice and data signals from the subscriber line signal. Any separation of upstream and downstream and voice and data must occurs within Hjartarson's xDSL modem 408 and POTS circuit 406.

Thus the cited references, alone or combined, *do not teach or suggest a SLIC having driver and receiver circuitry residing on a common integrated circuit die, wherein the receiver circuitry separates an upstream signal from the subscriber line into an upstream voice signal and an upstream data signal.*

In contrast, claim 13 includes the language:

> 13. A subscriber line interface circuit apparatus, comprising:
> driver circuitry for combining and driving a downstream voice signal, a metering signal and a downstream data signal onto a subscriber line; and
> receiver circuitry for receiving and separating an upstream signal from the subscriber line into an upstream voice signal and an upstream data signal, wherein the driver and receiver circuitry reside on a common integrated circuit die.

(Claim 13)(*emphasis added*)

Thus applicant submits claim 13 is patentable under 35 U.S.C. § 103 in view of the cited references. Given that claims 14-20 depend from claim 13, applicant submits that claims 14-20 are likewise patentable over the cited references.

Applicant respectfully submits that the 35 U.S.C. § 103 rejections have been overcome.

Conclusion

In view of the arguments presented above, applicant respectfully submits the applicable rejections and objections have been overcome. Accordingly, claims 1-20 should be found to be in condition for allowance.

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at **(512) 858-9910**.

Respectfully submitted,

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